

(No Model.)

M. HASTINGS.  
PISTON ROD GUIDE.

No. 409,199.

Patented Aug. 20, 1889.

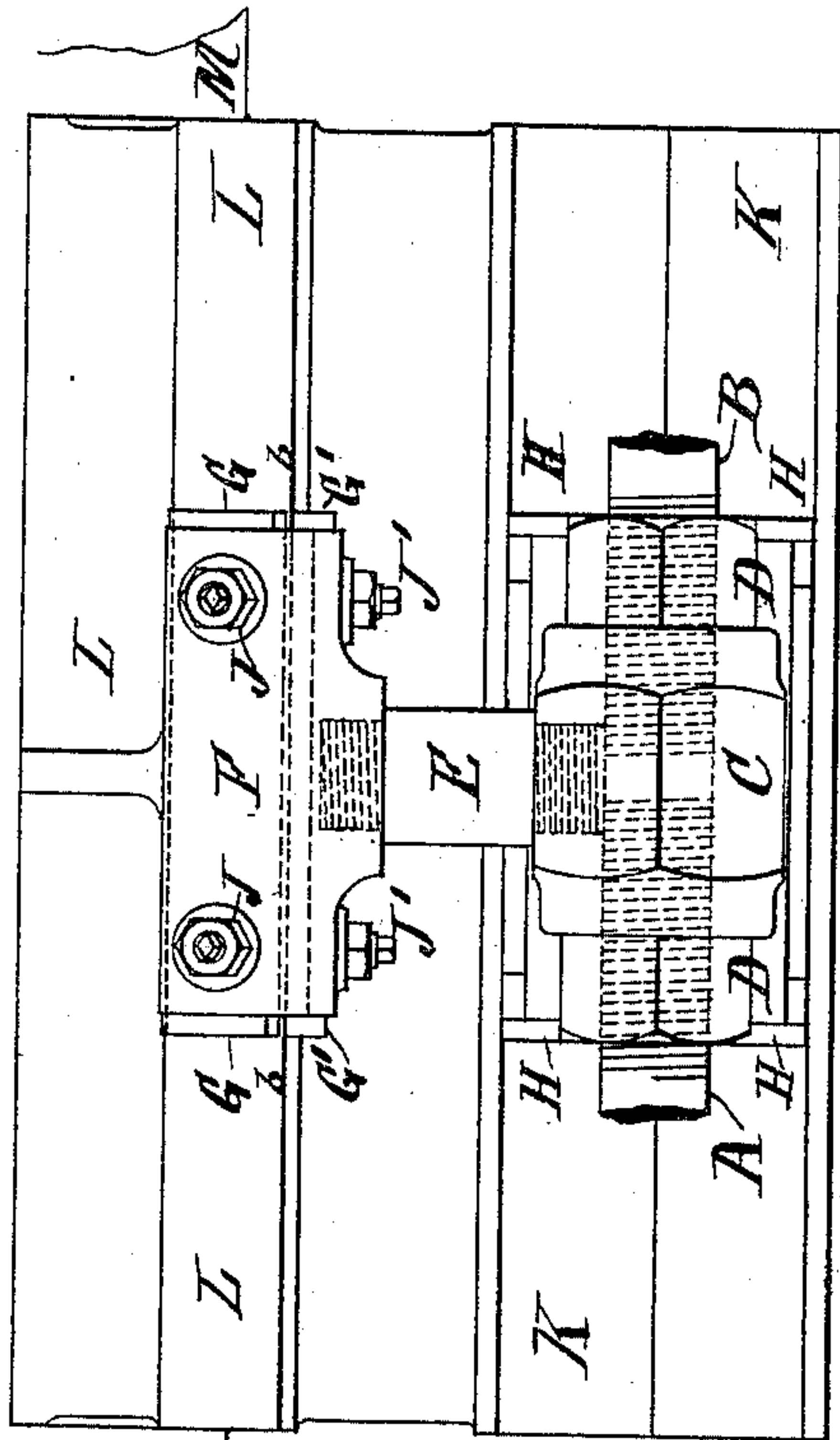


Fig. 1.

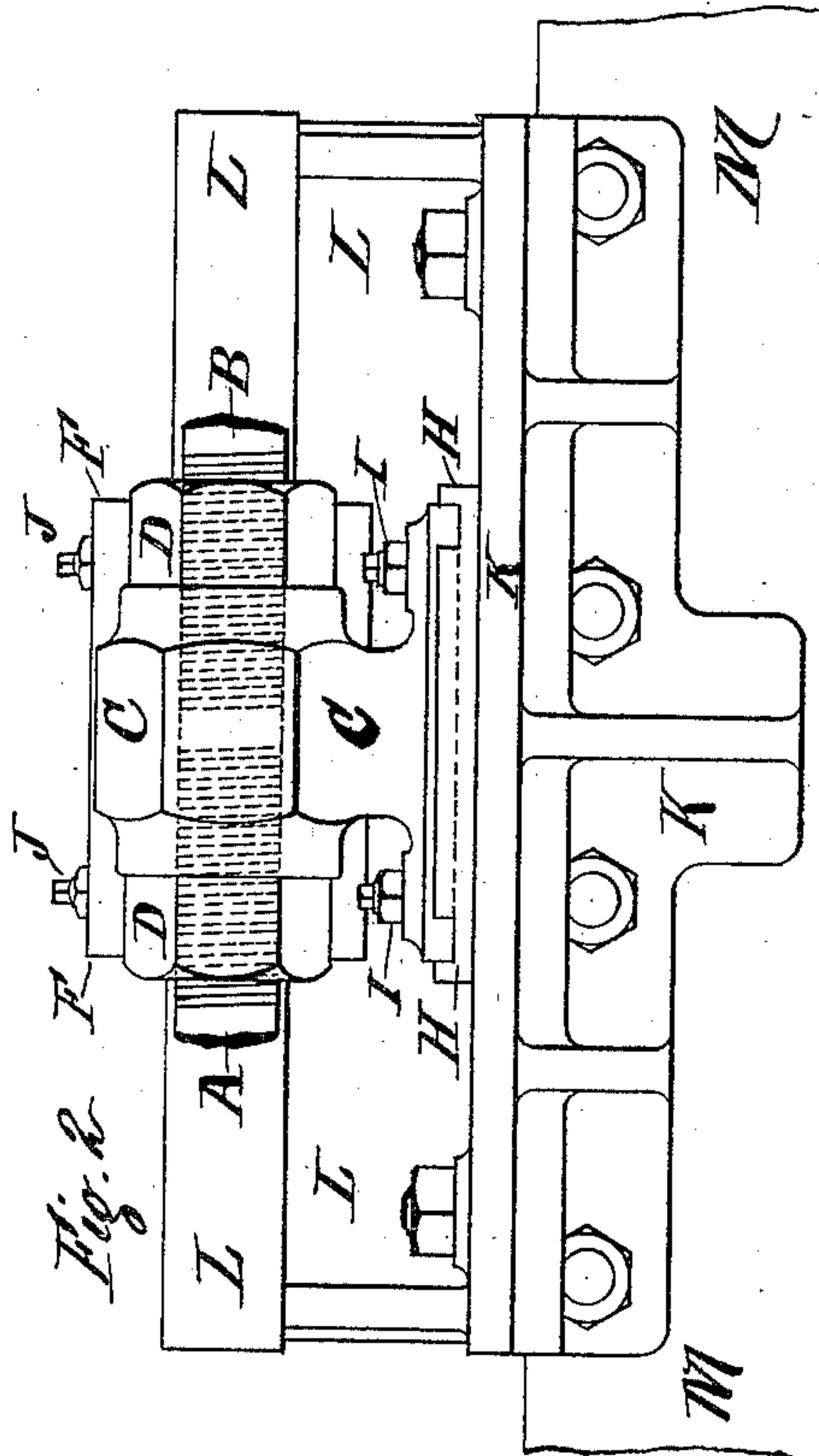


Fig. 2.

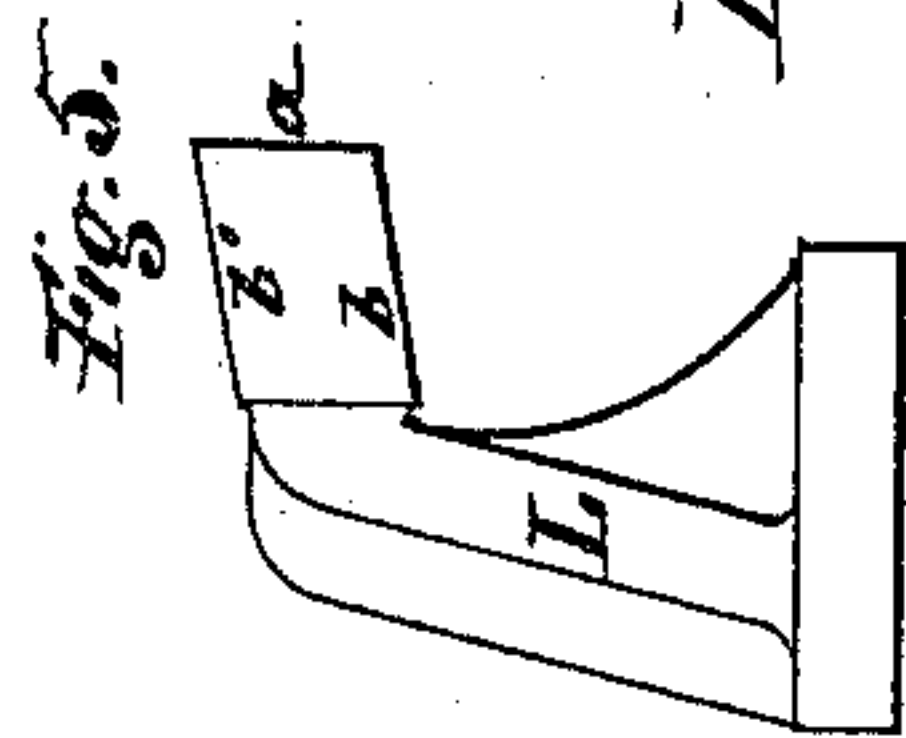


Fig. 3.

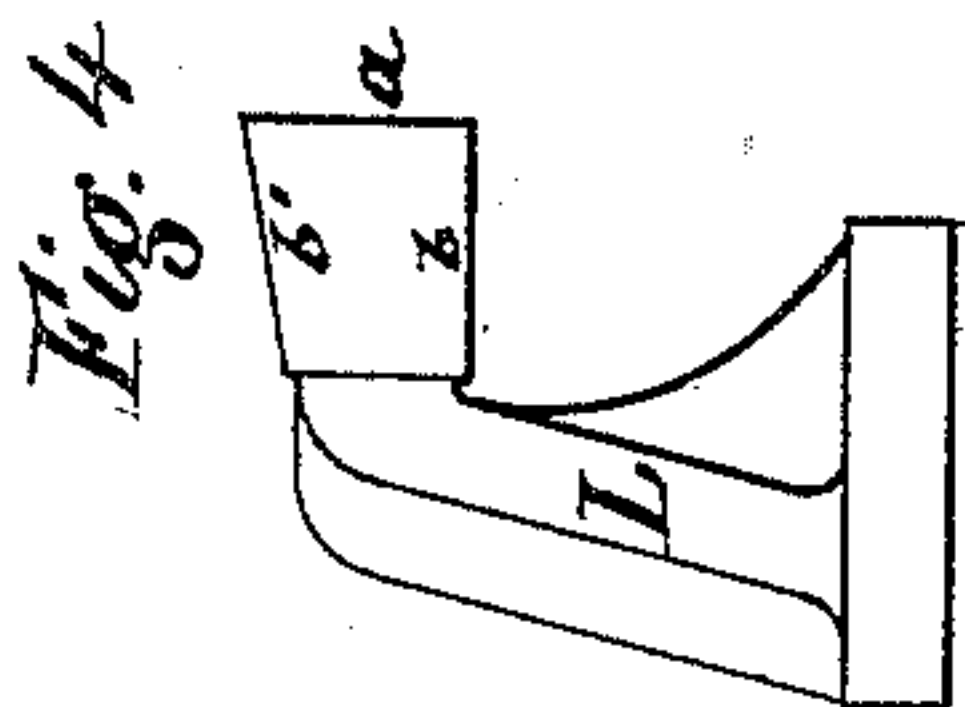


Fig. 4.

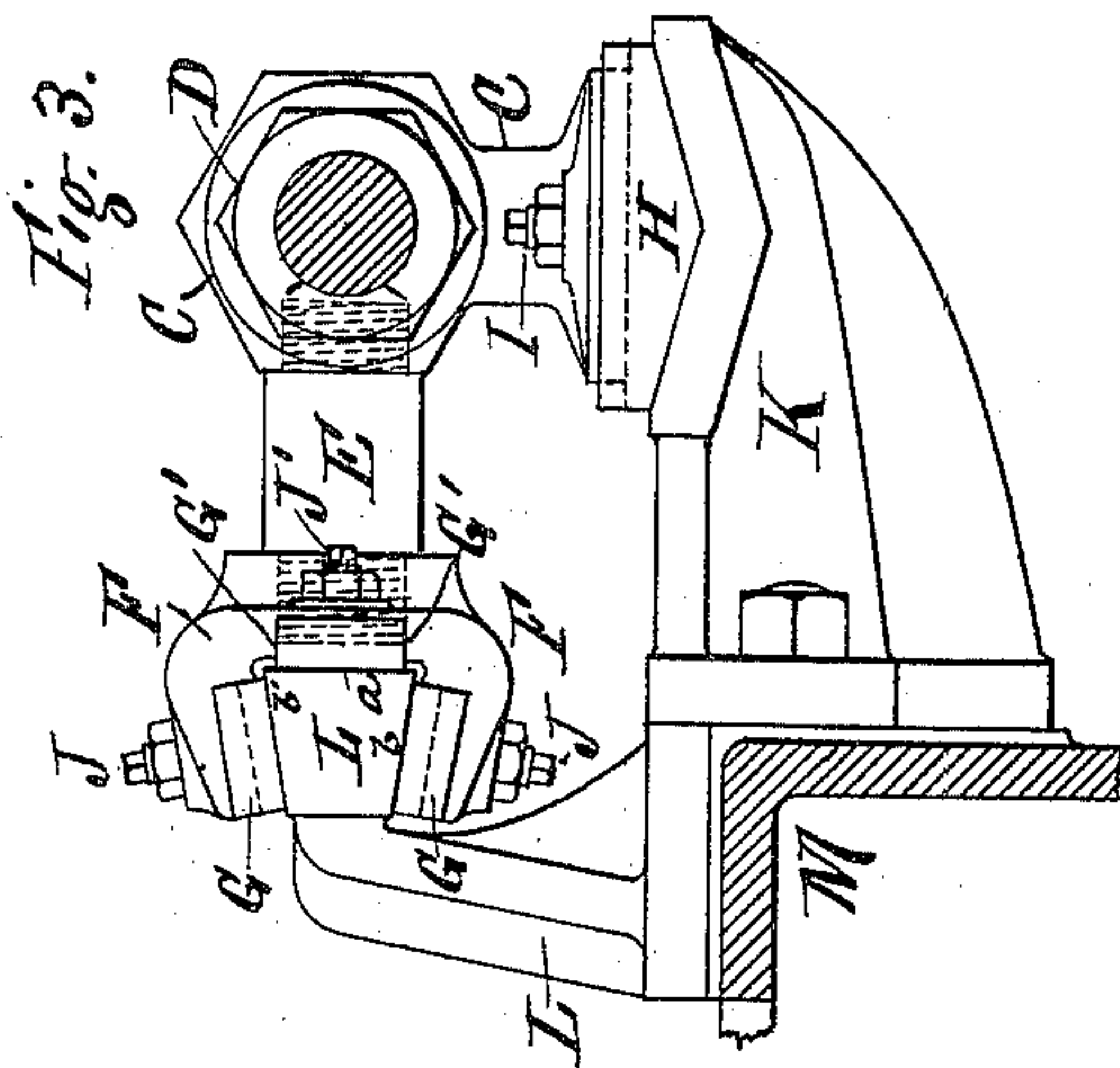


Fig. 5.

Witnesses:  
Manuel Rodriguez.  
Wm. H. Weightman

Inventor:  
Michael Hastings



# UNITED STATES PATENT OFFICE.

MICHAEL HASTINGS, OF BROOKLYN, NEW YORK, ASSIGNOR TO THOMAS W. WILLIAMS AND CHARLES A. WILLIAMS, OF NEW LONDON, CONNECTICUT.

## PISTON-ROD GUIDE.

SPECIFICATION forming part of Letters Patent No. 409,199, dated August 20, 1889.

Application filed March 9, 1889. Serial No. 302,599. (No model.)

*To all whom it may concern:*

Be it known that I, MICHAEL HASTINGS, a citizen of the United States, residing in Brooklyn, Kings county, and State of New York, have invented certain new and useful Improvements in Piston-Rod Guides, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates specially to the construction of a guide adapted to control the movements of rods having a reciprocating motion, as exemplified by the coupled or joint piston-rods of engines wherein the cylinders are located at opposite ends of a bed-plate and the piston-rod guides between them. The piston-rods of such cylinders may be separate, one belonging to each cylinder and individually attached to the guides, or they may be formed from one continuous rod, passing through and pinned or keyed to the guide, according to choice. Said guide is specially useful for direct-acting pumps in which the power-cylinder is located at one end of the bed-plate and the pump-cylinder at the other with direct piston-rod communication. A further feature in this construction is the provision of reliable means for attaching or coupling a connecting-rod onto said piston-rod guide for operating a crank-shaft and attached balance-wheel for purposes of smooth, anti-frictional, and steady motion or revolution. A special feature in this guide is ease of adjustment in any required direction and a reliable control of the movements of the piston-rod.

My improvements consist, therefore, in the construction, arrangement, and combination of the several parts or portions of the piston-rod guide and its accessories, as hereinafter shown and described.

Referring to the drawings, Figures 1, 2, and 3 represents detailed plan, side, and cross views of a piston-rod guide embodying my improvements. Figs. 4 and 5 represent modified shapes of side slide L.

Similar letters of reference designate like parts or portions in all the figures.

Letters A and B designate the piston or

pump rods for cylinders at each end of the bed-plate.

C designates the hub of the piston-rod guide, through which the rods pass and to which they are securely fastened. As shown, the rods for each cylinder are separate and are screwed into hub C, and jam-nuts D secure them against getting loose. Any of the well-known methods or means may be used for fastening the rods in position for work.

Letter E designates a connecting-pin securing the side guide F to the hub C. When required, it is made use of as a connecting-rod pin for communicating the rod motion to crank-shaft.

Letters G and G' designate outer and inner wearing-brasses of side guide F, the outer brasses G being specially set at an angle, as shown in Fig. 3, and the inner brass G' being set perpendicular, as shown, and wearing upon a side slide L, shaped to suit such position, and securely fastened to the bed-plate M, after the usual manner. The special angle of the wearing-faces of said slide L and the angular position of the brasses with reference to each other furnish means for side adjustment to the right or left, as may be necessary.

H designates bottom brass for taking the weights of rods or the thrust of crank-shaft revolution.

I I are adjusting-screws for brass H, and J J' are adjusting-screws for inner and outer side brasses G' and G.

K designates the bottom slide for brass H, and L the side slide. These are both bolted to bed-plate between the cylinders after the usual manner.

Figs. 4 and 5 represent modified and equivalent shapes of slide L, in which the upper face *b'* in both figures is kept at an angle to the perpendicular, while the bottom face *b* is shown in Fig. 4 in a true horizontal position with reference to the perpendicular side *a*, and in Fig. 5 the face *b* is shown parallel to face *b'*, both being at an angle to the perpendicular.

By means of the brass H, its slide K, and



adjusting-screws I I, the weight of the combined and connected piston or pump rods is taken and the up-and-down adjustment effected. By means of the combined outer  
 5 brasses G, both of which are preferably set at an angle to the perpendicular, and by the inner brass G', their slide L, and the adjusting-screws J and J', the side-thrust of rods and connections, as well as the side adjust-  
 10 ment, is taken care of in either direction. For instance, should the rods A and B require adjustment to the right, as represented in Figs. 1 and 3, pressure is brought to bear upon side face *a* of side slide L  
 15 by means of adjusting-screws J', and is released upon the angular faces *b b'* by unscrewing the adjusting-screws J J, or, again, if adjustment is required toward the left, pressure is released from the side face *a* by unscrew-  
 20 ing adjusting-screws J', and brought to bear upon the faces *b* and *b'* by screwing up on adjusting-screws J. When a crank-shaft and balance-wheel are used and a connecting-rod takes hold of and moves upon pin E after the  
 25 usual manner, all additional twist and side-thrust of push and pull are taken by the side brasses G and G', wearing on slide L, and the up-and-down thrust due to the angularity of the connecting-rod is taken by both side  
 30 brasses G G' on slide L and bottom brass H on slide K.

The angularity of the faces *b* and *b'*, as represented in Fig. 3 and also in Figs. 4 and 5, is the main and important feature of this im-  
 35 proved construction. Were these outer brasses G and their wearing-faces *b* and *b'* horizontal and parallel with each other, there could be no control of the side thrust or twist of the  
 40 guide.

Should there be no connecting-rod attached

and the movement alone of the piston-rods themselves required being kept under control, then the brass H and slide K might be done away with and guide F with brasses G and G' alone be used, either in the horizontal  
 45 position, as shown in Fig. 3, or in a vertical position, projecting either above the rods A and B or below them, taking the position occupied by slide H, the connection E being made shorter.  
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The bottom brass H is here represented of the V shape. It may, however, be of any of the well-known shapes, or a duplicate of the side guide F and its brasses G and G' may be used in its place.  
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What I claim as new, and desire to secure by Letters Patent, is—

1. A guide for rods having a reciprocating motion, consisting, essentially, of a connected jaw F, said jaw being provided with adjust-  
 60 ing-screws J and J' and contained adjustable brasses or wearing parts G and G', the said outer brasses G forming an acute angle with the said inner brass G', in combination with a slide L, upon which said brasses move, sub-  
 65 stantially as set forth.

2. In combination with a rod having a reciprocating motion, connecting-pin E and attached jaw F, said jaw F being provided with the outer wearing-brasses G and the inner  
 70 wearing-brass G', and the said outer brasses G being set at an angle acute to said inner brass G', each of said brasses being provided with adjusting-screws J and J' and operating upon a slide L, substantially as set forth.

MICHAEL HASTINGS.

Witnesses:

WM. H. WEIGHTMAN,  
 MANUEL RODRIGUEZ.